

 **KENWOOD**

**KX-1060**

STEREO CASSETTE DECK WITH DOLBY\* N.R.



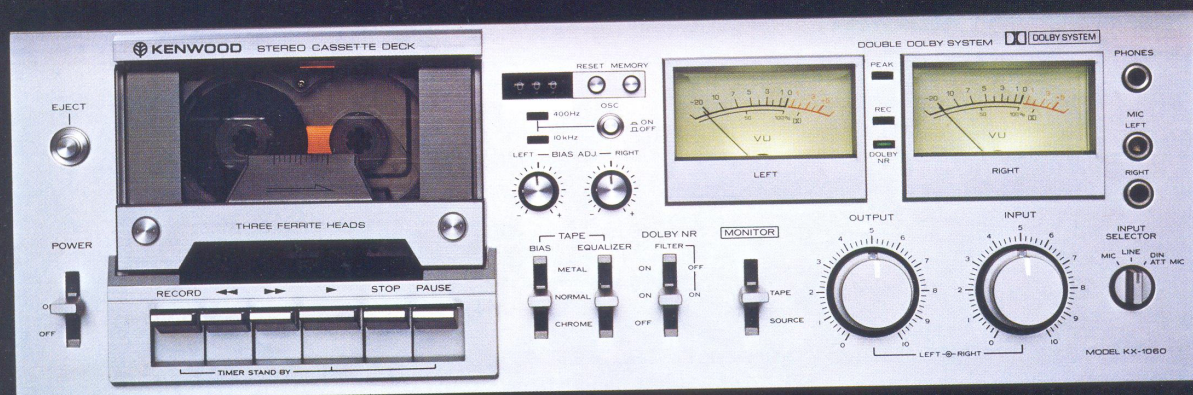


# The Kenwood KX-1060: 3-head cassette deck capable of accommodating all the latest advanced tapes.

- Metal tape capability
- Fine bias, equalization
- Frequency response to 19,000Hz
- S/N ratio 65dB (Dolby NR on, metal tape)
- Wow-and-flutter 0.045% (WRMS)

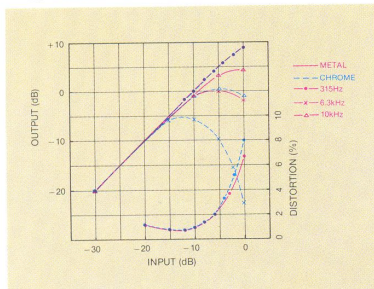
For the fast-growing group of audiophiles who demand a cassette deck that is capable of capturing on tape the best that modern audio equipment can reproduce, here is the KX-1060, incorporating some of the most advanced cassette technology available today. Its three-head design ensures that both recording and playback of tapes can be performed with optimum results in terms of extended frequency response, low distortion, low noise, wide dynamic range and high saturation levels. The provision of separate record and playback heads also means that the recorded program can be monitored instantly as it is being recorded. Moreover, with the double Dolby\* noise reduction system, the recording being monitored is precisely what will be heard in actual playback. But tape recording enthusiasts will undoubtedly appreciate the ability of the KX-1060 to accommodate every kind of tape

available—including the most recent and significant development, metal tape. With the variable, oscillator-adjusted bias control and separate equalization switch, any tape you choose will perform to the limits of its capability. But while these exciting features point to electronic excellence in the KX-1060, they are fully matched by the highly accurate, rugged and stable tape transport that utilizes the proven Kenwood two-belt drive system to maintain low wow-and-flutter of 0.045% (WRMS). In this brochure you will find full details of the many performance and design features that make the KX-1060 one of the finest decks to be found today. But there is only one sure way we can prove to you that the KX-1060 can record and playback tapes with an outstanding musical quality—visit your Kenwood dealer and try it out for yourself.





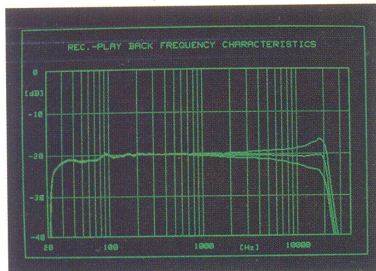
specially designed to handle this new "miracle" tape, and sound quality — the ultimate aim of hi-fi — is richer as a result.



The KX-1060 is specially designed for metal tape to significantly raise the level of cassette deck sound quality.

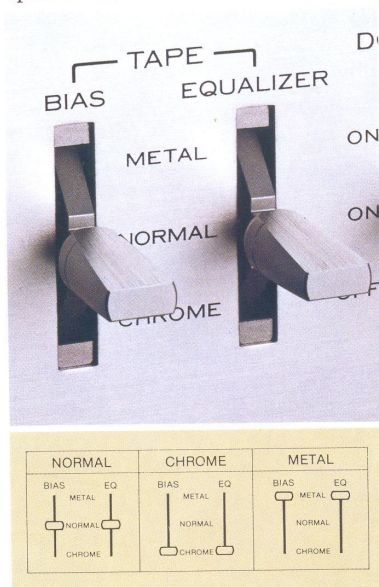
### Variable Bias And Separate Equalization

Each tape has its own "character" which must be carefully tuned by the deck's own electronics in order to achieve optimum recording and playback results. Adding a high-frequency bias tone to the tape during recording is one such method of "tuning". If an incorrect bias current is introduced, there may be some deterioration of frequency response. Since each tape is different, a different bias current should be applied to it. Thus the KX-1060 is provided with a variable fine-bias adjustment control that utilizes twin test tones at 400 Hz and 10 kHz, provided by a built-in oscillator. Switching between the two is automatic, with indication by an LED light. All the user needs to do is select the tape category (Metal, Chrome, Normal), record the test signals, play them back, and then adjust the control to



Fine-bias adjustment produces the best results from each tape category.

match them. In this way, optimum recording results can be obtained. The equalization switch has the same three positions to provide a frequency response curve that is identical in shape to that of the original source music. Operation of these two controls is easy, and the owner's manual explains in detail how each tape is optimized.

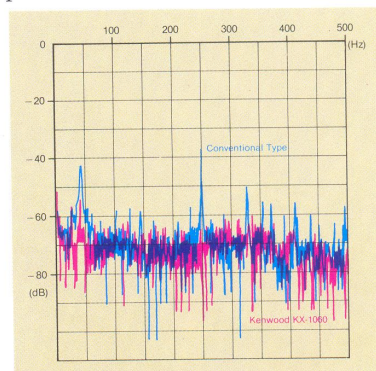


### Double Dolby Noise Reduction System With MPX Filter

To take full advantage of the KX-1060's monitoring capability, a double Dolby system is incorporated, with individual circuits for recording and playback operations. Thus the user can monitor, via the playback head adjacent to the record head, fully Dolby-decoded signals — in other words, the monitored sound is exactly the sound being recorded. High frequency tape hiss is eliminated and S/N ratio in the high range above 5 kHz is improved by up to 10 dB. Combined with this circuit is an MPX filter which can be switched in when FM stereo broadcasts are being recorded. This prevents the stereo pilot signal (at 19 kHz) from interfering with the Dolby circuitry. A green LED indicates Dolby operation.

### DC Servo Motor Isolated From Tape Transport

The electronic excellence of the KX-1060 is matched by superior mechanical engineering. This is evidenced, for example, by the elaborate method devised by Kenwood engineers to isolate the motor from the delicate tape transport. In this way, frequency response is improved and wow-and-flutter maintained over a long period of use.



With Kenwood's elaborate motor isolation structure, not only are resonance peaks reduced, but the modulation level is lowered.



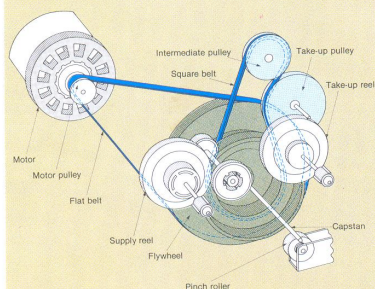
One way the KX-1060 prevents motor vibration from affecting the tape transport is the rugged, 12-rib rubber damper placed either side of the motor to "float" it.



### The Kenwood Two-Belt Transport: 0.045% (WRMS) Wow-And-Flutter

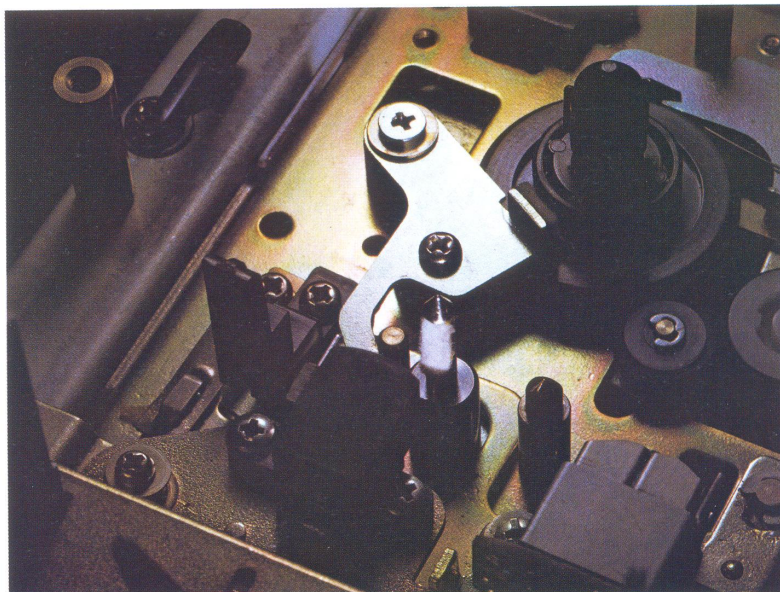
Although two motors might seem superior, Kenwood engineers have designed a rugged two-belt tape transport that uses a single motor producing only 0.045% (WRMS) wow-and-flutter. The highly stable, accurate two-belt-drive system uses a flat, wide belt to drive the precisely machined capstan while another belt drives the take-up reel. Thus no irregularity created in the build-up of tape on the take-up reel can affect the accuracy of the capstan drive. The diagram shows how this is done. In addition, the larger 210-gram flywheel produces inertial energy as high as 1094 g.cm, which is sufficient to absorb the minutest irregularities created in the rest of the transport.

Kenwood's two-belt drive system



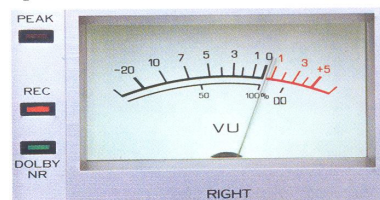
### More Useful Features Of The KX-1060

- **VU meters with peak-level LED**  
Average recording levels are provided by large VU meters. Transient signal peaks are indicated by fast-reacting LED that operate



Special double back-tension system for the tape provides optimum frequency response in the 3-head design, keeping tape tension even and reducing frequency modulation effect.

above +6 VU. VU meters, peak LED and tape monitor provide optimum results.



#### • Memory Index

Returns the tape to "000" after recording or playback. Shuts off automatically ready for further playback or re-recording, or repeats playback automatically.

### ▶ MEMORY INDEX

#### • Timer Stand-by

Set pause control in either record or playback mode. When the power is turned on by the timer, the deck will start operations. Record FM broadcasts on time, or when away. A timer such as the Kenwood AT-70 can also be put to use to play favorite waking-up music.

#### • Input selector with ATT MIC position

Avoid excessive input levels when live recording with a high-sensitivi-

ty microphone. The ATT MIC position attenuates level by 12 dB. The mic amplifier is bypassed when not in use to gain higher S/N ratio.

#### • Soft-touch lever operated controls

#### • Cassette door/tape loader

Air-damped for smooth operation. Removes for easy access to heads.



- Remaining tape illumination
- Full automatic shut-off in all modes

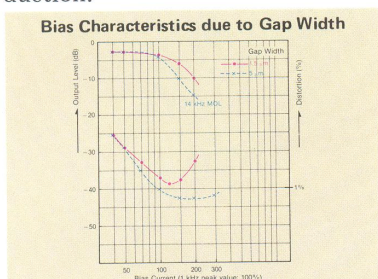
\* Trademark of Dolby Laboratories



# 3 HEAD SYSTEM

## The Dual-Combination 3-Head Design: Correct Gap Widths, Head Alignment, Improved S/N

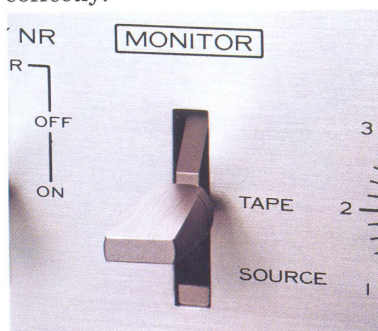
Most cassette decks employ a two-head design using a single magnetic head that combines the duties of both recording and playback. While this is satisfactory for those who choose a cassette deck chiefly for its convenience, for the perfectionist, only a 3-head design can provide the kind of sound quality approaching that of original source material. The reason for this is that the critical head gaps required for optimum results in recording or playback are different for each function. The playback head gap, for example, must be as narrow as possible in order to achieve greater sensitivity and high-frequency capability. This is because the higher the frequency to be recorded, the shorter its wavelength becomes, and when it is shorter than the playback head gap width, the response falls off drastically. This is why cassette decks usually fall far short of the 20 kHz upper audible limit. With the 3-head design of the KX-1060 however, the playback head is designed to an extremely narrow 1.0 micron. The result is an extended frequency response (to 19 kHz, metal tape), lower distortion, a higher saturation threshold and a wider dynamic range — performance criteria indispensable for high quality tape reproduction.



Extremely narrow, 1.0 micron playback head gap in the 3-head design is vital for high quality music reproduction.

## Monitoring The Recording

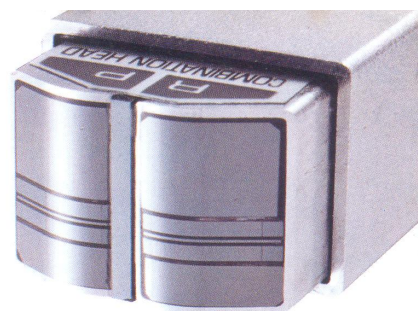
Since recording and playback operations are entirely separate, both the original and the recorded sound can be monitored for quality by switching alternately between SOURCE and TAPE monitor positions. This also makes it easier to set the recording level correctly.



Only a 3-head design can provide a monitor as a means of making perfect recordings.

## Kenwood's Dual-Combination 3-Head Design

The Kenwood 3-head design consists of separate heads for recording and playback placed close together in a single housing. Although it may be argued that the ideal format is to separate the heads completely as in open-reel design, there are several objections to this. For example, each head must be precisely aligned ("azimuth") to the tape and to each other since even the slightest misalignment can cause severe degradation of sound, especially with the tiny proportions and delicacy of the cassette format. The only way to correct azimuth misalignment is by adding a complex (and costly) adjustment function. A further disadvantage is to do with the original cassette design, which was based on a single opening for the record/playback head at the center of the cassette.



The Kenwood dual-combination 3-head design utilizes a specially hard, heat-treated ferrite material. It shows excellent high frequency characteristics and durability.

When entirely separate heads are used, the recording head is squeezed into another opening originally designed for another purpose. The usual result of this is degraded signal-to-noise performance. This is why the Kenwood dual-combination head is actually a more ideal format for cassettes.

## Metal Tape

### Now The Big News: Metal Tape

Metal tape is the latest development in cassette technology, an advance that allows the cassette deck to compete on equal audio terms with the new generation of amplifiers, tuners and turntables. The advantage of the new metal tape is that it has higher values of the magnetic properties called "coercivity", "retentivity" and "remanence". While metal tape with higher coercivity requires a stronger magnetic field from the record head in order to imprint the signal onto the tape, higher coercivity also significantly reduces the phenomenon known as recording loss, or self-erasure, associated with conventional tape. Recording loss occurs when flux from the recorded magnetic pattern influences the newly recorded magnetic pattern, causing the partial erasure of the newly recorded signal. Metal tape's greater "retentivity" results in an increase of high frequency output, while its greater "remanence" influences output in the midrange region. The electronics and magnetic heads of the KX-1060 have been



# KX-1060

## SPECIFICATIONS

|                             |  |
|-----------------------------|--|
| Type                        | Front Loading Stereo Cassette Deck with Dolby System                                       |
| Track System                | 4-Track 2-Channel Stereo/Mono Record/Playback  |
| Recording System            | AC Bias (Bias Frequency: 85 kHz)   |
| Erasing System              | AC   |
| Tape Speed                  | 4.76 cm/sec (1-7/8 ips)  |
| Heads                       | Three Ferrite Heads:<br>Record/Playback Combination Head<br>Erasing Head                   |
| Motor                       | Electronically Controlled DC Motor   |
| Fast Winding Time           | Approx 85 seconds with C-60 tape   |
| Frequency Response          |  |
| Normal Tape                 | 20 Hz to 18,000 Hz, (30 Hz to 17,000 Hz $\pm 3$ dB)  |
| CrO <sub>2</sub> Tape       | 20 Hz to 19,000 Hz, (30 Hz to 18,000 Hz $\pm 3$ dB)  |
| Metal Tape                  | 20 Hz to 19,000 Hz, (30 Hz to 18,000 Hz $\pm 3$ dB)  |
| Signal to Noise Ratio       |  |
| Dolby ON (Over 5 kHz)       | 63 dB (Normal Tape), 65 dB (CrO <sub>2</sub> ), 65 dB (Metal)                              |
| Dolby OFF                   | 53 dB (Normal Tape), 55 dB (CrO <sub>2</sub> ), 55 dB (Metal)                              |
| Harmonic Distortion         | Less than 1.0% (at 1 kHz, 0VU with Metal Tape)   |
| Wow & Flutter               | 0.045% (WRMS)  |
| Input Sensitivity/Impedance |  |
| Line x 2                    | 77.5 mV/50 kohms   |
| DIN x 1                     | 0.1 mV/ kohms... Europe, Scandinavia & U.K. models<br>0.75 mV/4.0 kohms... Other Countries |
| Microphones x 2             | 0.19 mV/18 kohms   |
| Output Level/Load Impedance |  |
| Line x 2                    | 775 mV (0VU)/100 kohms   |
| DIN x 1                     | 775 mV (0VU)/100 kohms   |
| Headphones x 1              | 48.9 mV/8 ohms to 16 ohms  |

|                      |  |
|----------------------|--|
| Additional Features  | Double Dolby Noise Reduction System with Indicator,<br>Three-Position Bias Selector (Normal-Chrome-Metal),<br>Three-Position Equalization Selector (Normal-Chrome-Metal),<br>Three-Position Input Selector (Line-Mic-DIN/ATT Mic),<br>Fine Bias Adjustment Controls with Oscillators (400 Hz, 10 kHz),<br>Full Auto Shut-off Mechanism in all Modes,<br>Memory Index,<br>LED Peak and Recording Indicator,<br>Tape Monitor,<br>MPX Filter,<br>Timer Stand-by Mechanism,<br>Three-Digit Tape Counter,<br>Two Microphone Jacks, Headphone Jack, DIN Rec/Playback Connector |
| Power Requirements   | AC 120V, 60 Hz... USA & Canada Models<br>AC 120/240V (Switchable), 50/60 Hz... Australia Model<br>AC 120/220-240V (Switchable), 50/60 Hz... Other Countries  |
| Power Consumption    | 14.0 watts   |
| Dimensions           | W 440 mm (17-5/16 inches)<br>H 153 mm (6.0 inches)<br>D 378 mm (14-7/8 inches)   |
| Weight               | 8.4 kg (18.5 lbs)  |
| Supplied Accessories | Stereo Connection Cord x 2<br>Head Cleaning Set x 1  |
| * Reference Tape     | Normal: MAXELL XLI C-60<br>Chrome: TDK SA C-60<br>Metal: TDK MA-R C-60   |

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.



Rack mounting carrying handles (D-80) are available as optional extras.

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